which it is itself capable of producing from limestone, also considerable quantities of iron ore.
As to which process the first place with regard to economy is to be assigned, admits of being easily ascertained on this class of basis, aided by the values previously obtained in special casos.
In order to obtain a better lucidity of view as to the results of the following calculations, let it be assumed that for all cases the same amount of pig iron, say, 1,000 tons, shall be worked in 24 hours.
Had one now a pig iron of the composition:
1 per cent. Si, 0'5 per cent. Mn, 0*08 per cent. P, and 4 per cent. C, the following would be necessary for the working ol: the same in the open-hearth furnace:
1st.-- Oro.
1-00 per cent. 81x4-32 (vide <>7)= 4%'W per cent. Fe./)8 0-30 „
MnX<K)7(„ 71)=: (Ml)
()•()« „ Vx4-«()(„ <)$))= 0-84 „ „
4-00 „ Px«'H>0(,, 7;i) = 1.4-40 __,, „ __
Total . . \9:S5~per amt lfoa(\
With ore containing 95 per cent. FeaO« and 5 per cent HiO* there must, therefore, be employed about 20 per cent, of ore.
(NOTE.—Here, as also later, the small amounts of reducing agents which the metal still contains on complete reflnenumt are disregarded. The ore requirement is, therefore, simply estimated on the total quantity of reducing agents.)
2nd. Limestone.
There is necessary for lixing the phosphoric acid, from formula (38) :
0-08 X!HU . . ".....=(KW pcu- cent. Ua()
For fixing the silica:
2* 14 per cent. Si().2 from Si in pig iron
I'OO ,, ,, ,, tho oro
0'45 »> - _ ^ » tho furnace structure Thus 3-59 per cent. SiO.^X 2-33 (vide, 41) . .=8-40 „ „
or a total ol . . 8-70 per cent. (1aO of which there would come from tho furnace hearth
(vide formula 3lA).....4-50 „ „
Thus roquirod to be added . . . 4-20 pen* cent. Uu()
Thin corresponds to 4*2x2=8-4 per cent, limestone. B.S.
X